NANCY FOSTER
LIFE BUOY

GENERAL NOTES

1. ALL MATERIALS AND WORKMANSHIP TO BE IN ACCORDANCE WITH A.B.S. AND U.S.C.G. RULES AND REGULATIONS.

2. ALL DUCTWORK OVER ELECTRICAL EQUIPMENT SHALL BE WATERTIGHT.

3. FANS SHALL BE FITTED WITH RESILENT MOUNTS AND ELECTRICALLY GROUNDED TO THE SHIP'S STRUCTURE.

4. ALL VENTILATION ONLY DUCTWORK IS UNINSULATED EXCEPT WHEN PASSING THROUGH CONDITIONED SPACES.

5. FABRICATE BENDS AND ELBOWS WITH AN INSIDE RADIUS EQUAL TO THE WIDTH OR DIAMETER. 90 DEG. ROUND ELBOWS SHALL BE MADE OF AT LEAST FIVE PARTS. DUCT JOINTS SHALL BE AIRTIGHT. REDUCTION IN DUCT SIZE SHALL BE ACCOMPLISHED BY LONG TRANSITIONS WITH MAXIMUM INCLUDED ANGLE OF 30 DEGREES.

6. ALL DIMENSIONS IN INCHES, UNLESS OTHERWISE STATED.

7. THIS DRAWING PROVIDES THE CONFIGURATION OF THE SHIP'S HVAC SYSTEM FOR THE NOAA SHIP NANCY FOSTER AND WAS DEVELOPED FROM A SHIPCHECK CONDUCTED AT CASCADE GENERAL, INC. IN PORTLAND, OREGON ON OCTOBER 28-30, 2002, FOLLOWING THE DEMILITARIZATION AND CONVERSION OF THE EX-USNV AGATE PASS (YTT-12) TO A NOAA RESEARCH VESSEL.

8. MINIMUM THICKNESS OF DUCT MATERIAL SHALL BE IN ACCORDANCE WITH THE TABLE IN THE MATERIAL SCHEDULE. THE THICKNESS IS DETERMINED BY THE DIAMETER OF THE ROUND DUCTS AND THE LARGEST DIMENSION OF RECTANGULAR DUCTS. DUCTS SHALL BE SUITABLY STIFFENED TO PREVENT BULGING AND PANTING.

9. FLANGES SHALL BE USED AT ALL EQUIPMENT CONNECTIONS. ALL FLANGED JOINTS SHALL HAVE GASKETS.

10. HANGERS SHALL BE FITTED FOR PROPER SUPPORT OF ALL DUCTWORK, TERMINALS AND BENDS IN DUCTWORK. HANGER SPACING SHALL NOT EXCEED 8'-0".

11. NEW AND MODIFIED SUPPLY DUCTS TO FAN COIL UNITS SHALL BE INSULATED WITH 1" THICK 3 LB PER CU FT FIBROUS GLASS BOARD FOR RECTANGULAR DUCTS AND 1" THICK 1.5 LB PER CU FT FIBROUS GLASS BLANKET FOR ROUND DUCT. INSULATION SHALL HAVE A FACTORY APPLIED ALUMINUM FOIL VAPOR BARRIER. JOINTS SHALL BE SEALED WITH ALUMINUM FOIL TAPE AND COATED WITH A SEALING COMPOUND COMPATIBLE WITH THE VAPOR BARRIER.

12. THIS DRAWING MODIFIES REFERENCE NOS. 1 THROUGH 4, 10, 12, AND 13.

MATERIAL SCHEDULE

SERVICE	SIZE *	MIN. THICKNESS	DUCT MATERIAL	TAKEDOWN JOINTS MATERIAL
HVAC DUCTING	UNDER 6"	#22 GAUGE	HOT DIPPED GALVANIZED SHEET STEEL	HOT DIPPED GALVANIZED SHEET STEEL
	6" TO 12"	#20 GAUGE		
	12" TO 24"	#18 GAUGE		
	OVER 24"	#16 GAUGE		
	WT DUCT	5.1# PLATE		

* SEE GENERAL NOTE 8

SYMBOL LIST

	EXHAUST DUCTING		FAN
	SUPPLY DUCTING	EF	EXHAUST FAN
	VENT REGISTER	SF	SUPPLY FAN
	MANUAL DAMPER	ECH	ELECTRIC CONVECTION HEATER
	FAN COIL UNITS	EUH	ELECTRIC UNIT HEATER
	RETURN/EXHAUST		COLLAR
	SUPPLY		TRANSITION
FD	FIRE DAMPER		SPLITTER
	INLET REGISTER		OUTLET REGISTER
	WATER TIGHT VALVE	PH	ELECTRIC PRE-HEATER

REVISIONS

REV	SHT	ZONE	ITEM	DESCRIPTION	DATE	APPD

REFERENCES

NO	TITLE	DRAWING NO
1.	YTT-9 CLASS VENTILATION BELOW MAIN DECK	512-6500954
2.	YTT-9 CLASS HVAC, MAIN DECK	512-6500955
3.	YTT-9 CLASS HVAC, FOCSLE DECK & ABOVE	512-6500956
4.	YTT-9 CLASS LOUVERS & MISCELLANOUS FAN DETAILS	512-6501023
5.	YTT-9 CLASS A/C AND AUX SW PIPING MODS, MACHINERY ROOM	502-6898800
6.	YTT-9 CLASS A/C PIPING SYSTEM BELOW MAIN DECK	514-6500994
7.	YTT-9 CLASS A/C PIPING SYSTEM ABOVE MAIN DECK	514-6500995
8.	YTT-9 CLASS FAN COIL UNIT DRAINS	528-6501020
9.	BOOKLET OF PLANS	NF-085-001
10.	HVAC REMOVALS	512-001
11.	CHILLED WATER PIPING SYSTEM MODIFICATIONS	532-001
12.	YTT-12 CONVERSION HVAC MODIFICATIONS	512-002
13.	VENTILATION MODS SYSTEM EF-7	512-4803595

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
OFFICE OF MARINE & AVIATION OPERATIONS

Seaworthy Systems, Inc.
P.O. BOX 940
ESSEX, CT 06426
TEL: (860) 767-9041

NOAA SHIP NANCY FOSTER

HVAC SYSTEM

CONTRACT	50-ABNA-0-00032
	TAR-SSI-021-(02)
DSGN	-/-/--
DWN	1/31/03 ERS
CHK	-/-/--
CHK	-/-/--
NOAA APPROVAL	

SIZE	CAGE CODE	NOAA DRAWING NUMBER	REV
D	0YLJ5	NF-512-003	-

SCALE: AS SHOWN
CAD FILENAME NF512003.DWG SHT 1 OF 11

19½x14 SUPPLY DUCT FROM ABOVE, SEE SHEET 5 FOR CONTINUATION

19½x14

12x12

SF-2
337 CFM

4ø
200 CFM

5ø

4ø

FCU-33

600 CFM

REMOTE OPERATOR

4ø

FCU-36

1000 CFM

EUH-6

6ø

FCU-34

600 CFM

6ø

MULTI-PURPOSE ROOM

4ø

4ø

60 CFM

5ø

4ø

BD

4"ø

EXERCISE ROOM

F.O. TANK NO.3 (P)

18x19 SUPPLY FROM SF-1, SEE SHEET 5 FOR CONTINUATION

EUH-12

7ø

60 CFM

FCU-37

600 CFM

30 CFM

SEWAGE TANK

BOW THRUSTER

℄ VESSEL FWD

45 40 35 30 25 20 15

3"ø

3"ø

3"ø

30 CFM

VOID

ENGINE ROOM

4ø

PASSAGE

REFR COMP.

8ø

CREW'S LOUNGE

18x19 EXHAUST TO EF-1, SEE SHEET 5 FOR CONTINUATION

FRZ

REFER

8"ø
360 CFM

FCU-35

600 CFM

EF-2
337 CFM

12x12
360 CFM

19½x14

1000 CFM

FCU-38

STORES

F.O. TANK NO.3 (S)

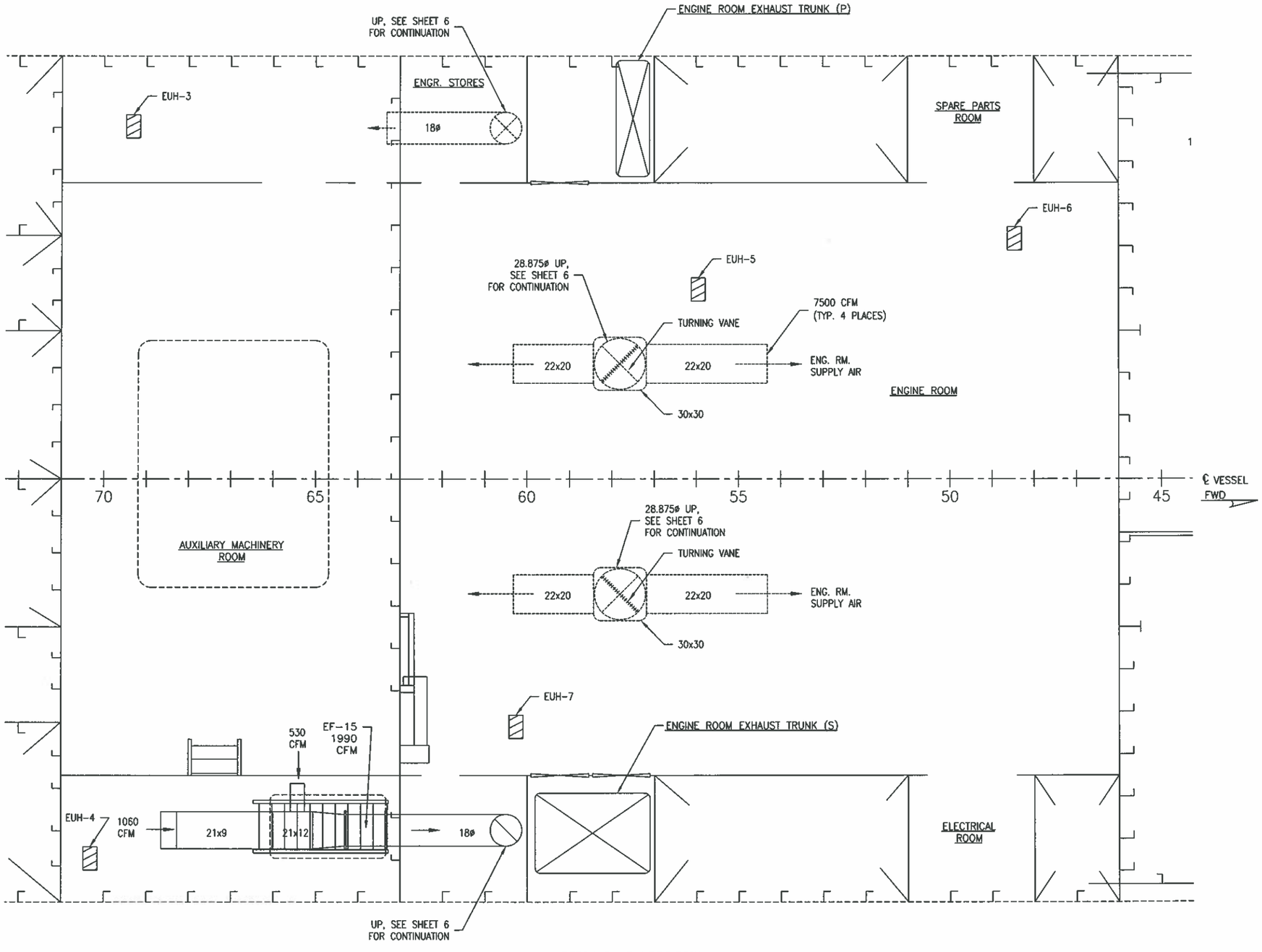
19½x14 EXHAUST DUCT TO WEX, SEE SHEET 5 FOR CONTINUATION

HVAC LAYOUT

OVERHEAD OF HOLD PLAN, FRAMES 12-46
SCALE: 3/8"=1'

0 12" 2' 4' 6' 8'
SCALE: 3/8" = 1'-0"

SIZE	CAGE CODE	NOAA DRAWING NUMBER	REV
D	0YLJ5	NF-512-003	–
SCALE: AS SHOWN	CAD FILENAME NF512003	SHT 3 OF 11	

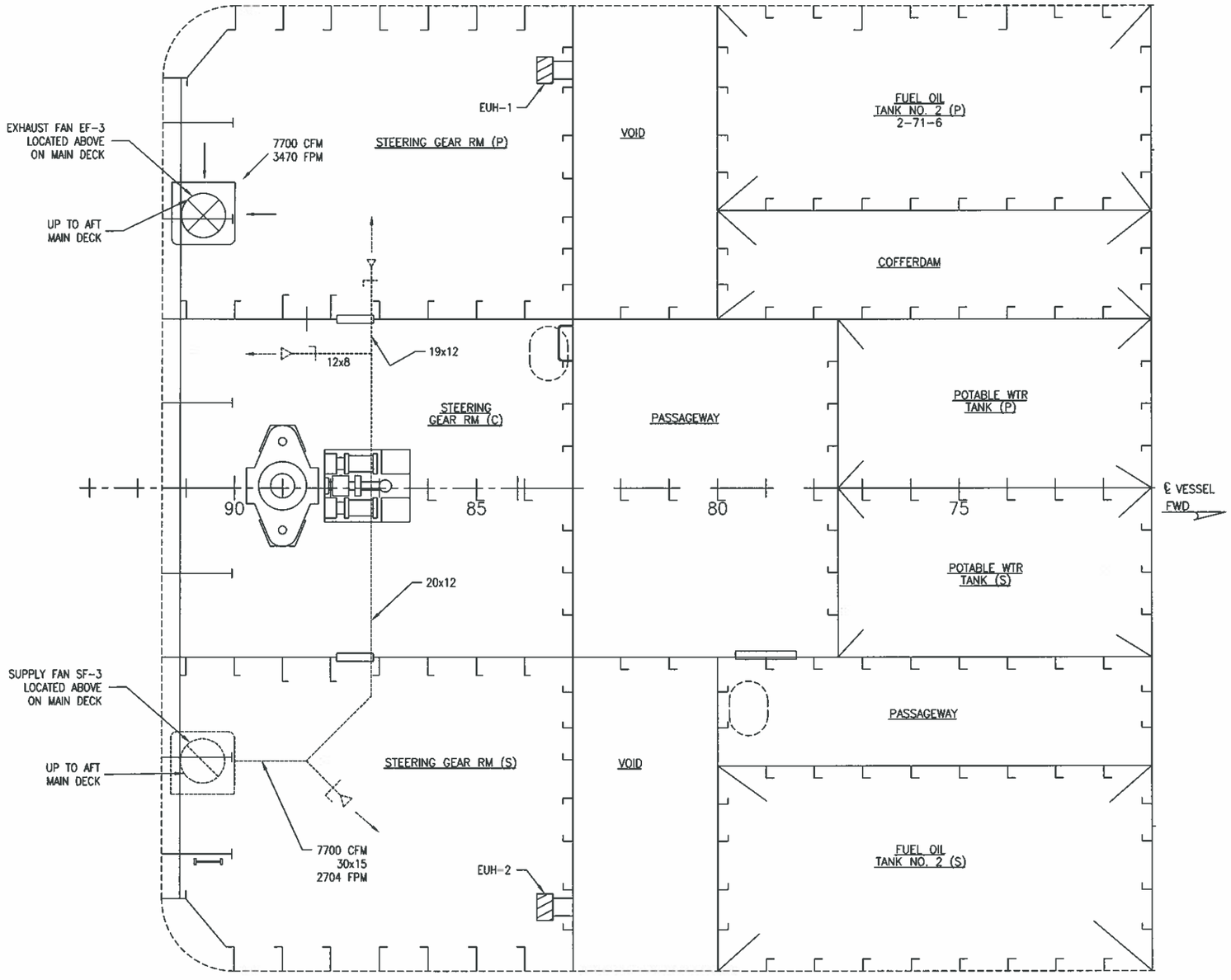


HVAC LAYOUT

OVERHEAD OF HOLD PLAN, FRAMES 46-71
SCALE: 3/8"=1'

0 12" 2' 4' 6' 8'
SCALE: 3/8" = 1'-0"

SIZE	CAGE CODE	NOAA DRAWING NUMBER	REV
D	0YLJ5	NF-512-003	-

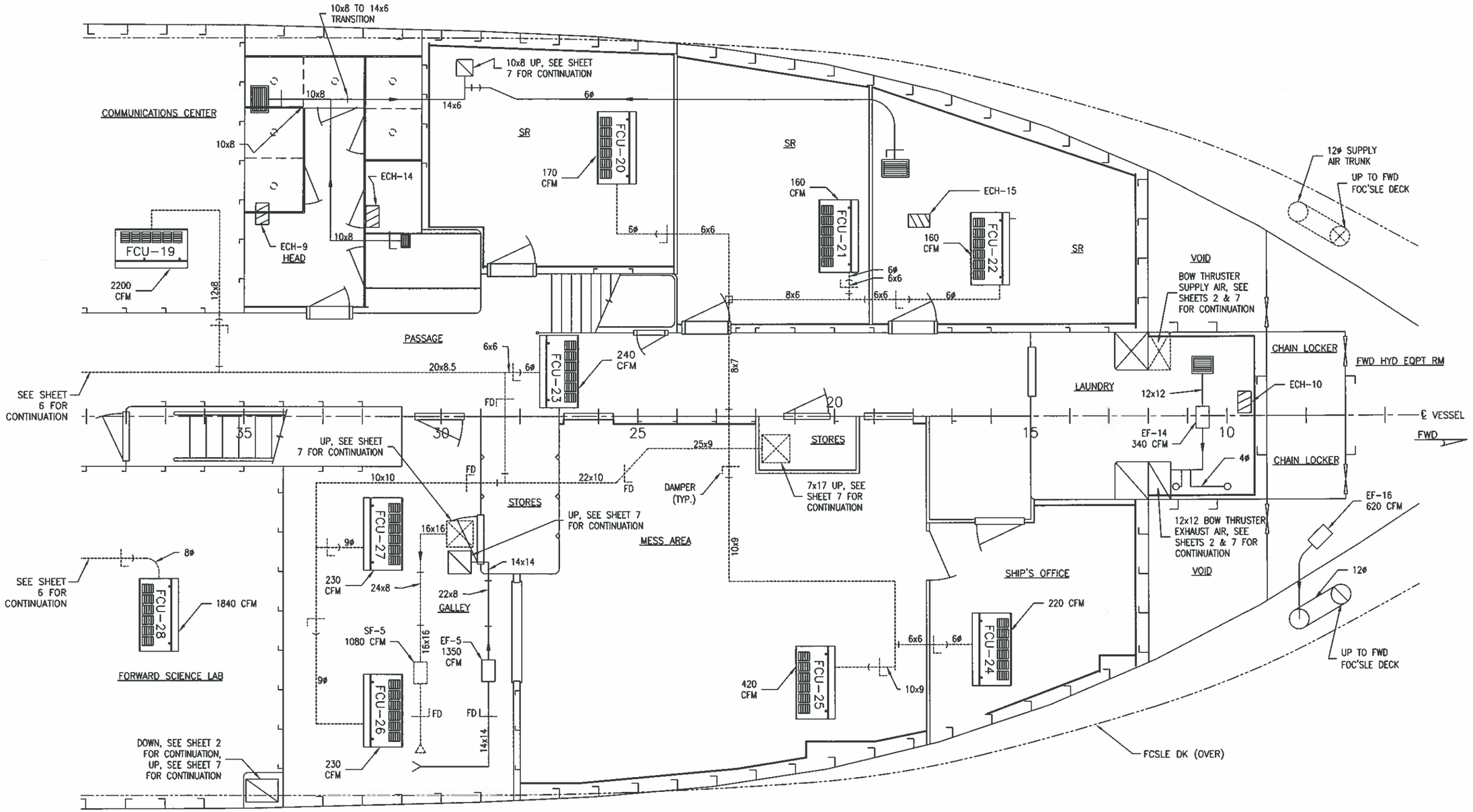


HVAC LAYOUT

OVERHEAD OF HOLD PLAN, FRAMES 71 TO TRANSOM
SCALE: 3/8"=1'

0 12" 2' 4' 6' 8'
SCALE: 3/8" = 1'-0"

SIZE	CAGE CODE	NOAA DRAWING NUMBER	REV
D	0YLJ5	NF-512-003	-
SCALE: AS SHOWN		CAD FILENAME NF512003	SHT 4 OF 11

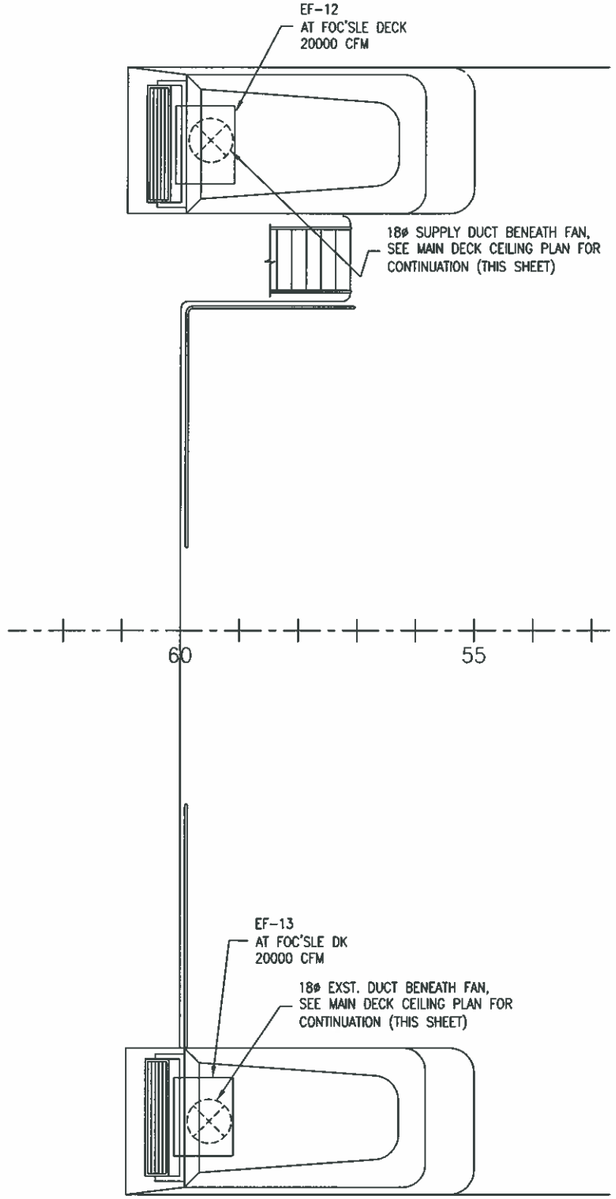


HVAC LAYOUT

MAIN DECK CEILING PLAN, FRAMES 5 TO 39
SCALE: 3/8"=1'

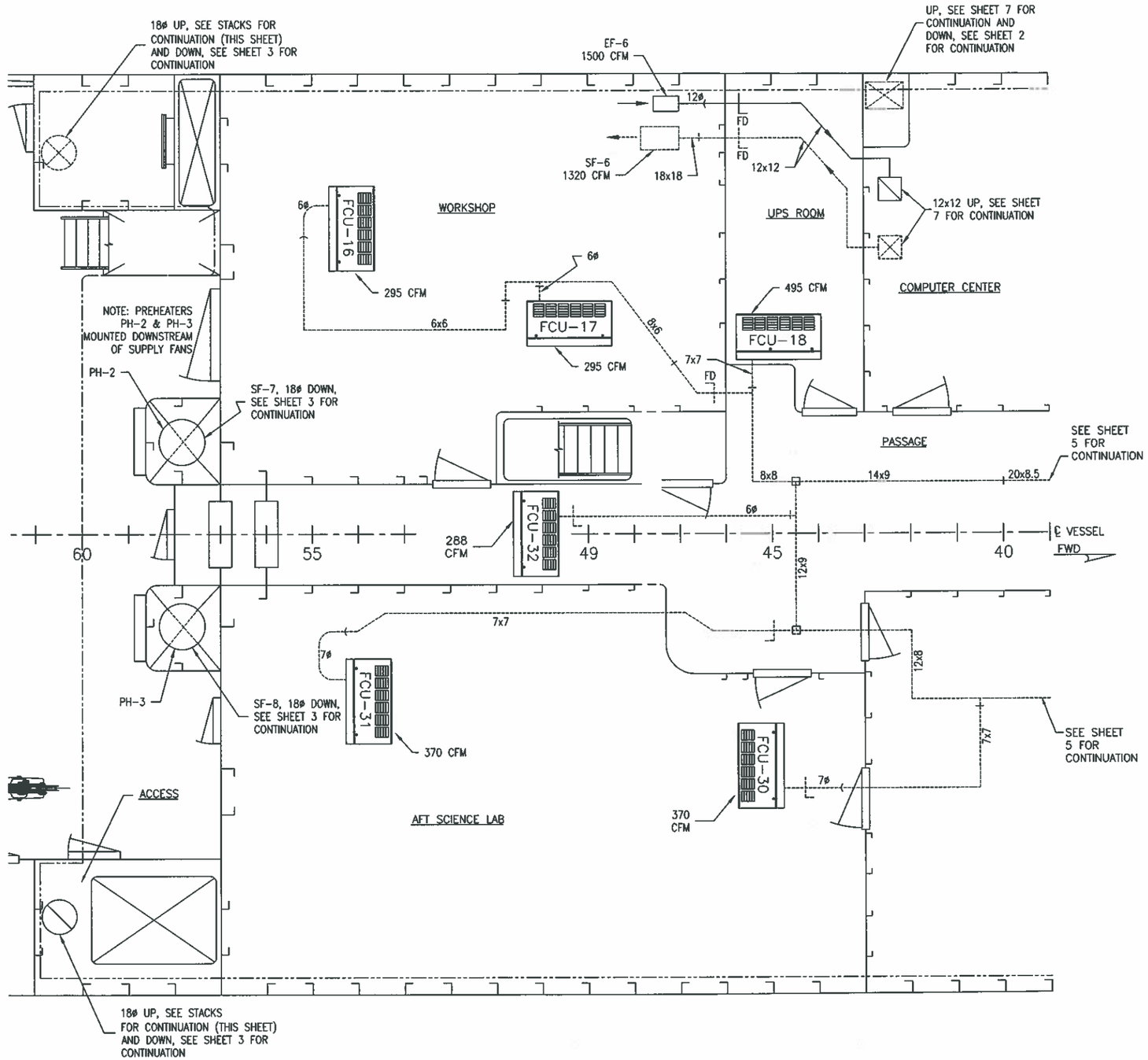
0 12" 2' 4' 8'6"
SCALE: 3/8" = 1'-0"

SIZE	CAGE CODE	NOAA DRAWING NUMBER	REV
D	0YLJ5	NF-512-003	–



HVAC LAYOUT

STACKS, FRAMES 53 TO 62
SCALE: 3/8"=1'

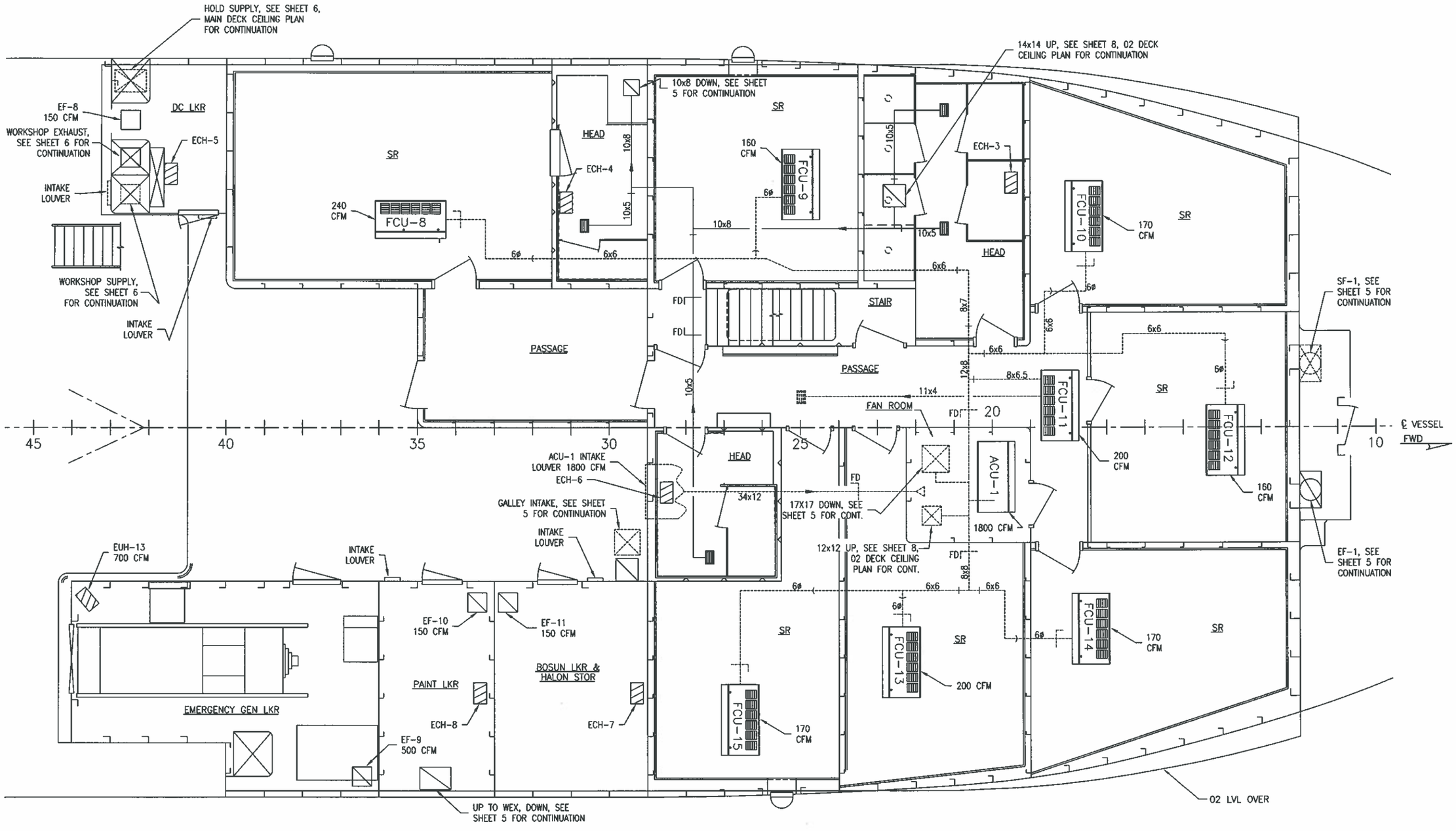


HVAC LAYOUT

MAIN DECK CEILING PLAN, FRAMES 40 TO 61
SCALE: 3/8"=1'

0 12" 2' 4' 6' 8'
SCALE: 3/8" = 1'-0"

SIZE	CAGE CODE	NOAA DRAWING NUMBER	REV
D	0YLJ5	NF-512-003	-

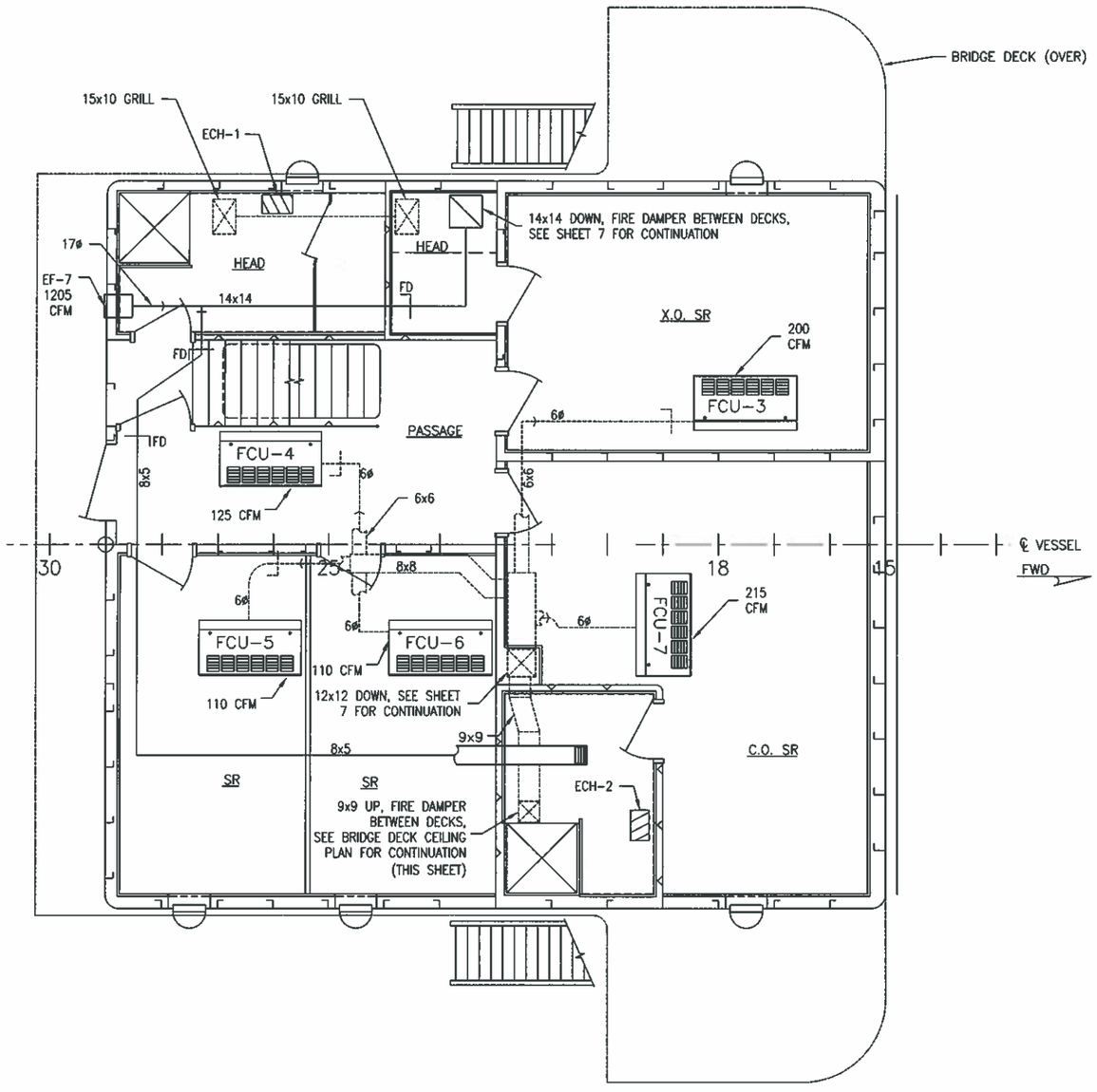


HVAC LAYOUT

FOC'SLE DECK CEILING PLAN
SCALE: 3/8"=1'

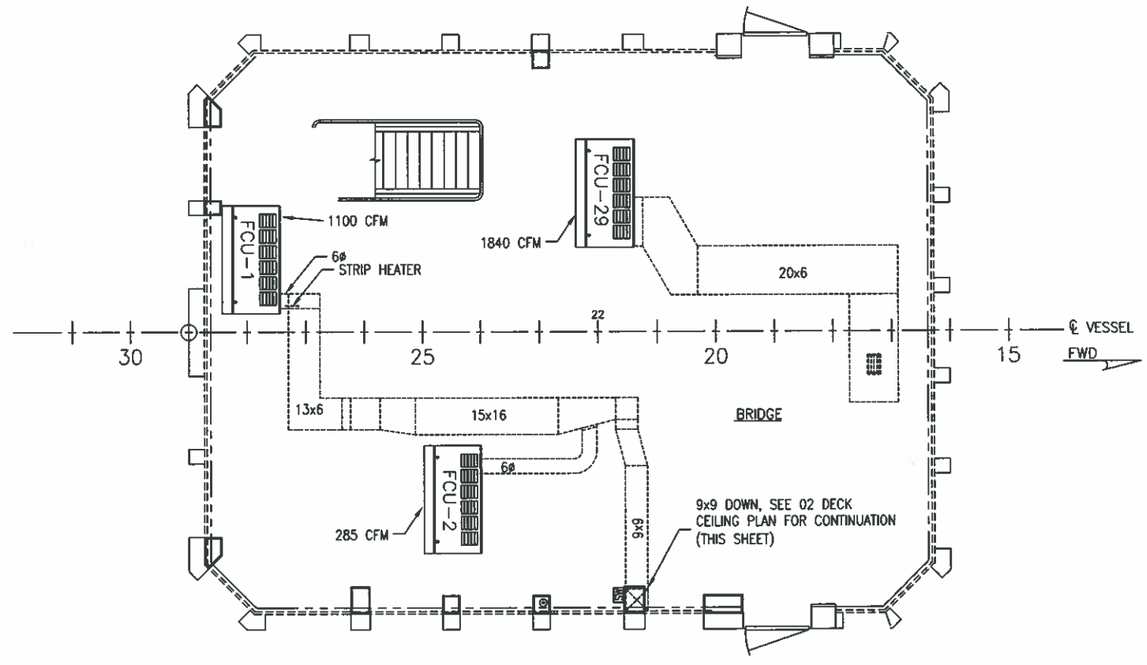
0 12" 2' 4' 6' 8'
SCALE: 3/8" = 1'-0"

SIZE	CAGE CODE	NOAA DRAWING NUMBER	REV
D	0YLJ5	NF-512-003	-
SCALE: AS SHOWN	CAD FILENAME NF512003	SHT 7 OF 11	



HVAC LAYOUT

02 DECK CEILING PLAN
SCALE: 3/8"=1'



HVAC LAYOUT

BRIDGE DECK CEILING PLAN
SCALE: 3/8"=1'

0 12" 2' 4' 6' 8'
SCALE: 3/8" = 1'-0"

SIZE	CAGE CODE	NOAA DRAWING NUMBER	REV
D	0YLJ5	NF-512-003	–

FAN COIL AIR CONDITIONING UNIT SCHEDULE

	FAN DATA					COOLING COIL DATA 45° E.W.T. ENT. AIR TEMP				HEATING COIL DATA					
Plan Mark	CFM	Fresh Air CFM	External S.P.	Fan Motor WATTS	Electric Service	Total Cooling Capacity BTU/H	DB °F	WB °F	GPM	MAX H2O PRESS DROP (FT)	KW	ENT. AIR TEMP °F	STAGES	ELECTRIC SERVICE	REMARKS	UNIT SIZE
1	1100	130	0	610	120-1-60	24477	75.0	62.5	71.4	12	5*	70.0	2	120-1-60	CARRIER MODEL #42CG	8
2	285	35		155		6700			1.5		2					3
3	200			155		4909			1.0		1.5					3
4	125			105		818			0.2							2
5	110					2203			0.4							
6	110					1700			0.3		2					
7	215			155		2951			0.6		2					3
8	240	40		155		4965			1.0		1.5					3
9	160			105		3540			0.7							2
10	170					3806			0.8							
11	200	35				1371			0.3							
12	160	40				3521			0.7							
13	200					3328			0.7							
14	170					3976			0.8							
15	170					3592			0.7							
16	295	35		155		6616			1.3		2		1			3
17	295	35		155		6616			1.3							3
18	495	55		345		10598			2.1							5
19	2200	230		840		48017			9.6						CARRIER MODEL #42DF	8
20	170	40		105		3117			0.6		1.5				CARRIER MODEL #42CG	2
21	160					2966										
22	160					3204										
23	240	35		155		2758					2					3
24	220	40		155		3157										3
25	420	200		345		11983			2.4							5
26	230	35		155		5269			1.0							3
27	230	35		155		5269			1.0							3
28	1840	190		840		39715			7.9						CARRIER MODEL #42DF	8
29	1840	190		840		39715			7.9				2		CARRIER MODEL #42DF	8
30	370	50		200		8408			1.7				1		CARRIER MODEL #42CG	4
31	370	50		200		8408			1.7							4
32	288	35		155		2711			0.5							3
33	600	80	0	1/12 HP	120-1-60	6000	59.5	56.5	4.2	5	5	62.0	1	120-1-60	CARRIER MODEL #42CG	6
34																
35																
36	1000	60				20000		59.2	8.0	8	4	71.0				10
37	600	30				6000		59.2	4.2	8	2	71.0				6
38	1000	30				20000		57.1	8.0	31	4	73.0				10

* UNIT CONTAINS 3 KW HEATER W/A 2 KW EXTERNAL HEAT STRIP

SIZE	CAGE CODE	NOAA DRAWING NUMBER	REV
D	0YLJ5	NF-512-003	-

AIR CONDITIONING UNIT SCHEDULE

		FAN DATA					COOLING COIL DATA 45° E.W.T.					HEATING COIL DATA				
								ENT. AIR TEMP								
Plan Mark	SERVING	CFM	Fresh Air CFM	External S.P.	Fan Motor HP	Electric Service	Total Cooling Capacity BTU/H	DB °F	WB °F	GPM	MAX H2O PRESS DROP (FT)	KW	ENT. AIR TEMP °F	STAGES	ELECTRIC SERVICE	REMARKS
1	FRESH AIR/FAN COILS	1800	1800	0.85	3	480-3-60	119160	90.0	81	23.8	12	38	100	3	440-3-60	CARRIER CENTRAL STATION TYPE "D"

EXHAUST FAN SCHEDULE

Plan Mark	SERVING	CFM	S.P. INCHES W.C.	H.P.	MOTOR RPM	ELECTRIC SERVICE	TIP SPEED OR MAX. SONE S	DRIVE	FAN TYPE & MOUNTING	QUAN. OF SPEEDS	REMARKS
EF-1	BOW THRUSTER	7200	1.0	2	-	440-3-60	1750	DIRECT	AXIAL IN-LINE	2	HARTZELL 38-24-WJ3
EF-2	M.P. RM / LOUNGE	337	0.50	1/8	1550	115-1-60	4413	DIRECT	-	1	GREENHECK SQ-80-D
EF-3	STEERING GEAR RM	7700	3.45	10	3450/1725	460-3-60	17440	3280 FAN RPM	-	2	WOODS MARINE 56JM/31/2/9/.. TRN NO. 003
EF-4	(REMOVED)										
EF-5	GALLEY	1350	1.5	1	-	440-3-60	16.4	DIRECT	B.I. CENTRIF. -INLINE	2	HARTZELL 52-14-T12
EF-6	WORKSHOP	1500	0.75	1	-	440-3-60	16.8			2	HARTZELL 38-12-WE2
EF-7	02 DECK HEAD	1205	0.45	1/3	-	120-1-60	6.3			1	HARTZELL 38-16-WE3
EF-8	DC LOCKER	150	0.25	1/20	-		3299		PROPELLOR-WALL	2	GREENHECK SDE 12-24-E
EF-9	EMERGENCY GEN.	500		1/15	-		4869				GREENHECK SDE 12-24-D
EF-10	PAINT LOCKER	150		1/20	-		3299				GREENHECK SDE 12-24-B
EF-11	BOSUN LKR & HALON	150		1/20	-		3299				GREENHECK SDE 12-24-E
EF-12	ENGINE ROOM	20000	0.5	5	-	440-3-60	6312		AXIAL IN-LINE		HARTZELL 52-14-T12
EF-13	ENGINE ROOM	20000	0.5	5	-	440-3-60	6312		AXIAL IN-LINE		HARTZELL 52-14-T12
EF-14	LAUNDRY	340	0.5	1/8	-	120-1-60	4413		B.I. CENTRIF. -INLINE	1	GREENHECK DSQ-90-D
EF-15	AUX. MACH. ROOM	1990	0.75	3/4	-	120-3-60	1725		AXIAL IN-LINE	2	HARTZELL 38-24-WJB
EF-16	FOREPEAK VOID	620	0.25	1/3	-	440-3-60	1750		AXIAL IN-LINE	1	HARTZELL 38-12-WG3

SUPPLY FAN SCHEDULE

Plan Mark	SERVING	CFM	S.P. INCHES W.C.	H.P.	MOTOR RPM	ELECTRIC SERVICE	TIP SPEED OR MAX. SONE S	DRIVE	FAN TYPE & MOUNTING	QUAN. OF SPEEDS	REMARKS
SF-1	BOW THRUSTER	7200	1.0	1.5	-	440-3-60	1750	DIRECT	AXIAL IN-LINE	2	HARTZELL 38-24-WJ3
SF-2	M.P. RM / LOUNGE	337	0.325	1/12	1550	115-1-60	4413	DIRECT	-	1	GREENHECK SQ-80-D
SF-3	STEERING GEAR RM	7700	4.35	10	3450/1725	460-3-60	17972	3280 FAN RPM	-	2	WOODS MARINE 56JM/31/2/9/.. TRN NO. 003
SF-4	(REMOVED)										
SF-5	GALLEY	1080	1.0	1/3	-	120-1-60	12.5	DIRECT	B.I. CENTRIF. -INLINE	2	GREENHECK DSQ-120-A
SF-6	WORKSHOP	1320	1.0	1	-	440-3-60	16.4		B.I. CENTRIF. -INLINE		GREENHECK DSQ-130-A
SF-7	ENGINE ROOM	14730	0.5	5	-		5811		AXIAL IN-LINE		HARTZELL 38-28-WL3
SF-8	ENGINE ROOM	14730	0.5	5	-		5811		AXIAL IN-LINE		HARTZELL 38-28-WL3

SIZE	CAGE CODE	NOAA DRAWING NUMBER	REV
D	0YLJ5	NF-512-003	-

ELECTRIC CONVECTION HEATER SCHEDULE

Plan Mark	SERVING	CFM	FAN MOTOR HP	KW	STAGES	ELECTRIC SERVICE	REMARKS
ECH-1	02 LEVEL HEAD	-	-	1.0	1	120-1-60	INDEECO 252-X22801935-12 WALL MOUNT
ECH-2	02 LEVEL, C.O. HEAD	-	-	0.5			-17 WALL MOUNT
ECH-3	FOC'SLE DECK WR/WC	-	-	1.0			-12 WALL MOUNT
ECH-4	FOC'SLE DECK PORT HEAD	-	-	1.0			-12 WALL MOUNT
ECH-5	DC LOCKER	-	-	3.0		440-1-60	-18 WALL MOUNT
ECH-6	FOC'SLE DECK STBD HEAD	-	-	0.5		120-1-60	-17 WALL MOUNT
ECH-7	BOSUN LKR & HALON STOR.	-	-	3.0		440-1-60	-18 WALL MOUNT
ECH-8*	PAINT LOCKER	-	-	3.0		440-1-60	253-F0304Q-6003T WALL MOUNT
ECH-9	MAIN DECK HEAD	-	-	0.5		120-1-60	INDEECO CAT 252-X22B019535-17
ECH-10	MAIN DECK LAUNDRY	-	-	0.5		120-1-60	INDEECO CAT 252-X22B019535-17
ECH-14	MAIN DK BERTHING HEAD	-	-	0.5	1	120-1-60	INDEECO 252-X22801935-12 WALL MOUNT
ECH-15	MAIN DK STATEROOM	-	-	0.5	1	120-1-60	INDEECO 252-X22801935-12 WALL MOUNT

* ECH-8 TO BE EXPLOSION PROOF

ELECTRIC UNIT HEATER AND PRE-HEATER SCHEDULE

Plan Mark	SERVING	CFM	FAN MOTOR HP	KW	STAGES	ELECTRIC SERVICE	REMARKS
EUH-1	STEERING GEAR RM PORT	700	1/8	5.0	2	480-3-60	INDEECO 234-U11N-0050U-3115
EUH-2	STEERING GEAR RM STBD						
EUH-3	AUXILIARY MACH. RM PORT						
EUH-4	AUXILIARY MACH. RM STBD						
EUH-5	ENGINE ROOM						
EUH-6	ENGINE ROOM						
EUH-7	ENGINE ROOM						
EUH-8	(REMOVED)						
EUH-9							
EUH-10							
EUH-11							
EUH-12	BOW THRUSTER	700	1/8	1.0	1	120-1-60	INDEECO 234-U11N-0010B-3114
EUH-13	EMERGENCY GENERATOR	700	1/25	5.0	1	480-3-60	INDEECO 234-U11N-0050Q3115
PH-1	(REMOVED)						
PH-2	ENGINE ROOM	-	-	7.5	1	440-3-60	INDEECO CAT 252-X22B019535-17
PH-3	ENGINE ROOM	-	-	7.5	1	440-3-60	INDEECO CAT 252-X22B019535-17

SIZE	CAGE CODE	NOAA DRAWING NUMBER	REV
D	0YLJ5	NF-512-003	-